

  
21-26

**Tiger Brand  
Wire Rope  
Engineering  
Hand Book**



**U. S. Steel Supply**  
Division of United States Steel

**ATTACHMENT  
3. A.**

AMERICAN TIGER BRAND

## ATTACHING SOCKETS

The practice here detailed is recommended by the United States Bureau of Mines in Bulletin No. 75. It is the most satisfactory method in use today.

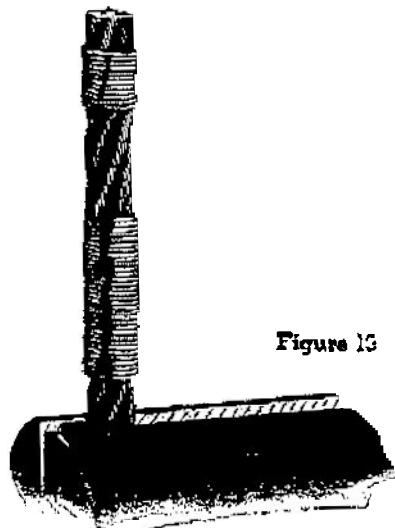


Figure 18

and of sufficient length to prevent any untwisting of the strands, which would result in unequal tension on the strands when socket is attached.

A seizing iron as shown in Fig. 46 page 111 is recommended for applying seizures to ropes one inch diameter and larger.

Place rope end upright in bench vise as shown in Fig. 19.

Remove any seizing above the one referred to in previous paragraph. Cut the fiber core at the seizing. See Fig. 20.

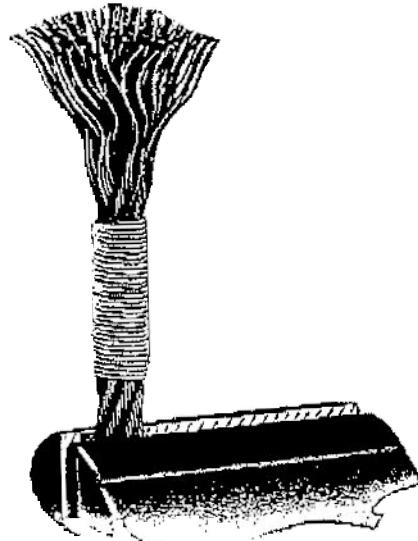


Figure 19

Place an additional seizing on the rope end to be socketed at a distance equal to the length of the basket of the socket from the end of the rope. It is important that this seizing be carefully applied

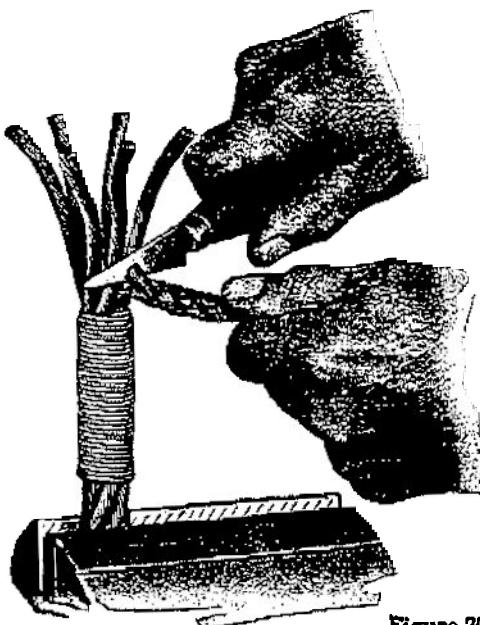


Figure 20

Untwist the strands and broom out the wires. The wires should be separated but not straightened. See Fig. 21.

The wires for the distance they are to be inserted in the socket should be carefully cleaned with benzine, naphtha, or gasoline, and then dipped in a bath of muriatic acid solution (50% commercial muriatic acid and 50% water) for about 30 seconds to one minute, or until the acid has thoroughly cleaned each wire. Care should be taken to prevent acid coming in contact with the fiber core or any portion of the rope other than the broomed wire ends. The acid should be neutralized by next dipping the wires into boiling water to which has been added a small amount of soda.

Draw the ends of the wires together with a piece of seizing wire so that the socket can be forced down over them. See Fig. 22.

**WIRE ROPE ENGINEERING HANDBOOK**

Force the socket down over the rope end until it reaches the seizing on the wire rope. Remove the seizing wire from the wires and allow the wires to

expand within the socket basket. The ends of the wires should be level with the upper end of the socket basket.

Care should be taken to see that the axis of the socket is in line with the axis of the rope.

Seal the base of the socket with putty, clay, or similar substance.

It is advisable to preheat the basket of the socket to expel any moisture and to prevent the molten zinc from congealing before it has completely filled the lower end of the basket.

Fill the socket basket with molten zinc. The zinc must not be too hot or it will anneal the wires, particularly on small ropes or ropes of small wires. From 800 to 875 degrees Fahrenheit is the correct temperature. See Fig. 23.

When the zinc has congealed the socket can be plunged into cold water to cool it.

The seizing can then be removed.

Fig. 24 shows a Tiger Wire Rope Socket applied by this method before the seizing was removed.

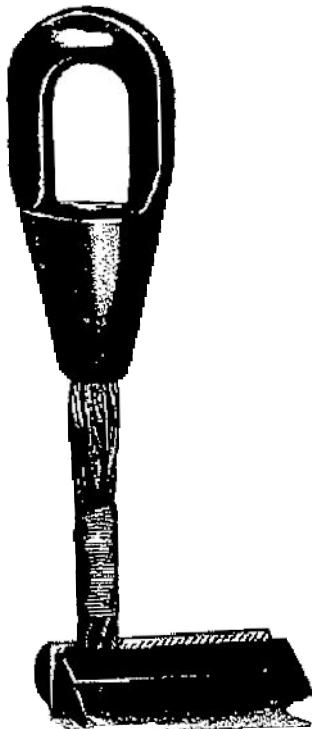


Figure 22

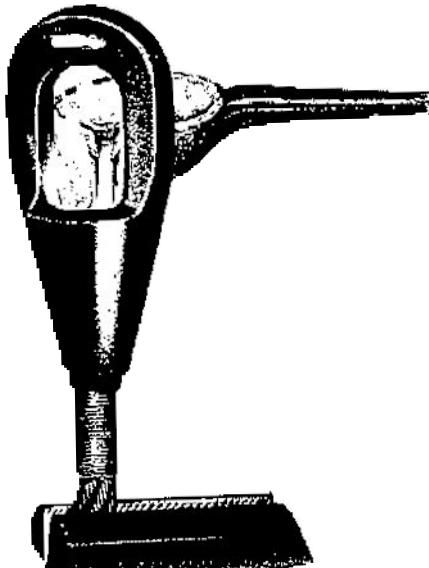


Figure 23

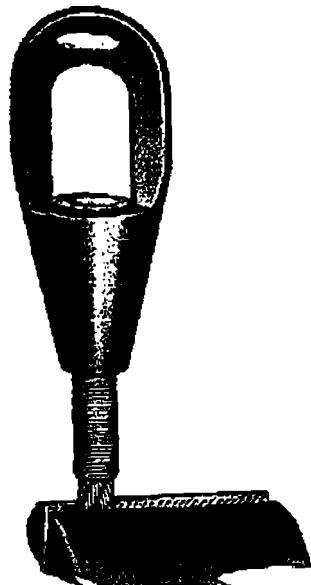


Figure 24

If the socketting is properly done, when tested to destruction, a wire rope will break before it will pull from the socket.

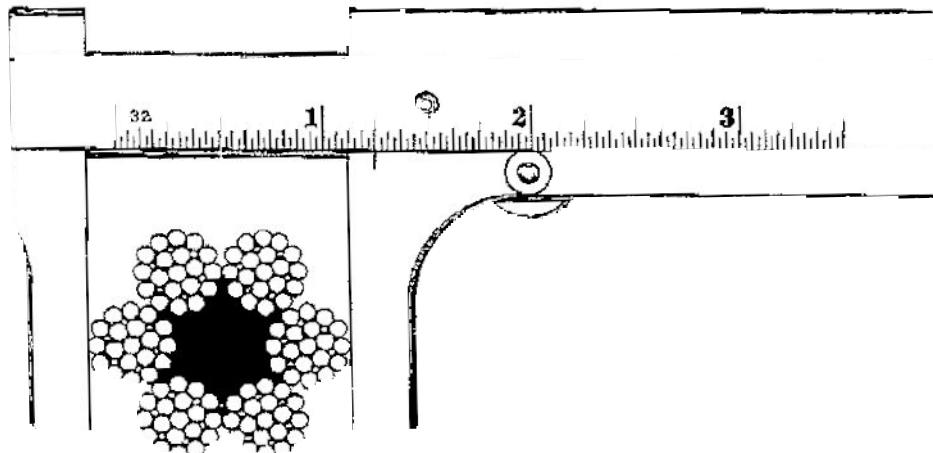
For directions for attaching sockets to strands we recommend that you confer with us stating size and grade of strand. We also suggest that you consult us regarding the socketting of stainless steel and bronze wire ropes and strands.

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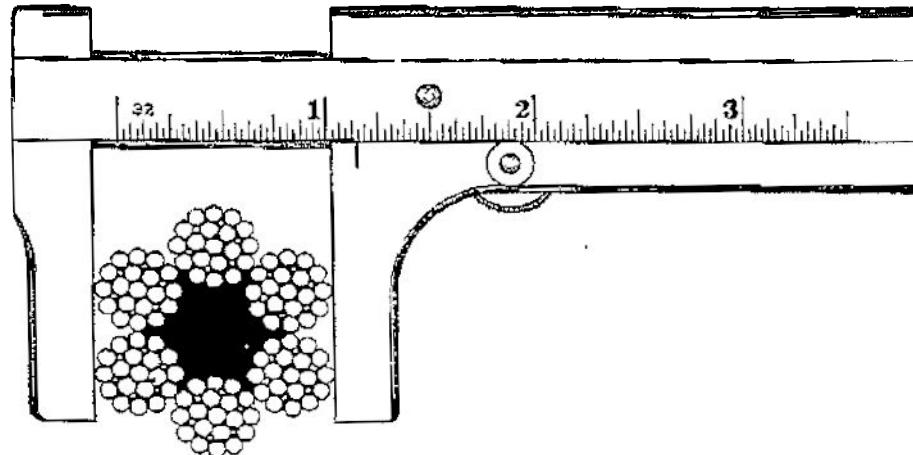
## GAUGING WIRE ROPE

The diameter of a wire rope is the diameter of the circle which will just enclose all of the wires. The correct diameter is the greatest diameter of the rope or strand.

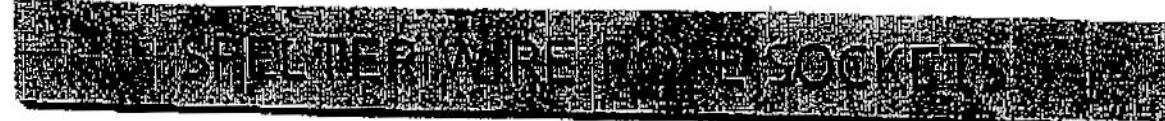
circle which will just enclose all of the wires. The correct diameter is the greatest diameter of the rope or strand.



**CORRECT WAY**  
This gives correct  
diameter.



**INCORRECT WAY**  
This does not give  
correct diameter.

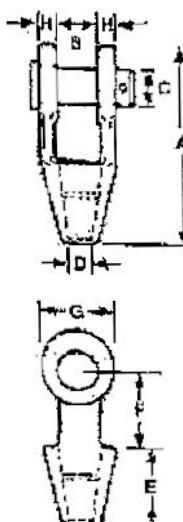

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[Wire Rope](#)
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[Fittings](#)

## IMPORTED AND DOMESTIC SPELTER WIRE ROPE SOCKETS

**Read important warnings and information on pages 3 and 4 and preceding fittings section.**  
**Caution:** When attaching spelter sockets to wire rope it is extremely important to follow recommended procedures, such as outlined by the Wire Rope Technical Board. Proper brooming and cleaning of wire rope is important. If resin is used, follow resin manufacturer's specific installation instructions.

### OPEN SPELTER SOCKETS

Not galvanized. Forged steel through 1-1/2". Hollow cast steel 1-5/8" and larger. SAE 10C-2.1/2" according to F. Specification Q/R-S-A-1000. Not recommended for use.



Size	Dimensions in Inches								Weight Each in Pounds
	A	B	C	D	E	F	G	H	
5/16"-3/8"	4.88	.81	.81	.50	2.25	1.75	1.50	.44	1.3
7/16"-1/2"	5.56	1.00	1.00	.56	2.50	2.00	1.88	.60	2.3
9/16"-5/8"	6.75	1.25	1.19	.69	3.00	2.50	2.25	.56	3.8
3/4"	7.94	1.50	1.38	.81	3.50	3.00	2.63	.63	6.0
7/8"	9.25	1.75	1.63	.94	4.00	3.50	3.13	.75	10.0
1"	10.56	2.00	2.00	1.13	4.50	4.00	3.75	.88	15.5
1-1/8"	11.81	2.25	2.25	1.25	5.00	4.50	4.13	1.00	22.0
1-1/4"- 1-3/8"	13.19	2.50	2.50	1.50	5.50	5.00	4.75	1.13	32.0
1-1/2"	15.13	3.00	2.75	1.63	6.00	6.00	5.38	1.19	46.0
1-5/8"	16.25	3.00	3.00	1.75	6.50	6.50	5.75	1.31	55.0
1-3/4"- 1-7/8"	18.25	3.50	3.50	2.00	7.50	7.00	6.50	1.56	85.0
2"-2-1/8"**	21.50	4.00	3.75	2.25	8.50	9.00	7.00	1.81	125.0
2-1/4"- 2-3/8"**	23.50	4.50	4.25	2.50	9.00	10.00	7.75	2.13	165.0
2-1/2"- 2-5/8"**	25.50	5.00	4.75	2.88	9.75	10.75	8.50	2.38	252.0
2-3/4"- 2-7/8"**	27.25	5.25	5.00	3.13	11.00	11.00	9.00	2.88	315.0
3"-3-1/8"**	29.00	5.75	5.25	3.38	12.00	11.25	9.50	3.00	380.0

### CLOSED SPELTER SOCKETS

Size	Dimensions in Inches								Weight Each in Pounds
	A	B	C	D	E	F	G	H	
5/16"-3/8"	4.88	.94	.63	.50	2.25	2.00	1.69	.69	1.1
7/16"-1/2"	5.44	1.13	.69	.56	2.50	2.25	2.00	.88	1.5

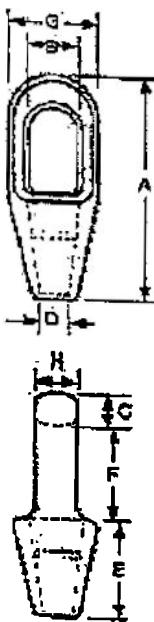
PERIODIC INSPECTION

EXHIBIT *Re*

*Alejandro 4*  
5-13-03

ATTACHMENT

4. A



Efficiency of socket and  
intertensions. 100% of the  
breaking strength of wrench.  
These drawings illustrate  
grooves used in sockets 7/8" &  
smaller. Sizes 9/16" & 1/2" have  
two grooves. Sizes 1-3/4" & larger  
have three grooves.

9/16"-5/8"	6.31	1.38	.81	.69	3.00	2.50	2.63	1.00	3.0
3/4"	7.56	1.63	1.06	.81	3.50	3.00	3.00	1.25	4.5
7/8"	8.75	1.88	1.25	.94	4.00	3.50	3.63	1.50	7.0
1"	9.88	2.25	1.38	1.13	4.50	4.00	4.13	1.75	11.0
1-1/8"	11.00	2.50	1.50	1.25	5.00	4.50	4.50	2.00	16.0
1-1/4"- 1-3/8"	12.13	2.75	1.63	1.50	5.50	5.00	5.00	2.25	22.0
1-1/2"	13.94	3.13	1.94	1.63	6.00	6.00	5.38	2.50	28.0
1-5/8"	15.36	3.25	2.13	1.75	6.50	6.75	5.75	2.75	36.0
1-3/4"- 1-7/8"	17.25	3.53	2.19	2.00	7.50	7.56	6.75	3.00	58.0
2"-2-1/8"	19.50	3.78	2.44	2.25	8.50	8.56	7.63	3.25	80.0
2-1/4"- 2-3/8"	21.38	4.28	2.88	2.50	9.00	9.50	8.50	3.63	105.0
2-1/2"- 2-5/8"	23.50	5.50	3.13	2.88	9.75	10.63	9.50	4.00	140.0
2-3/4"- 2-7/8"	25.38	6.50	3.13	3.13	11.00	11.25	10.75	4.88	220.0
3"-3-1/8"	27.00	6.75	3.25	3.38	12.00	11.75	11.50	5.25	276.0

Also available in DOMESTIC.

ATTACHMENT  
4. B.